Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 11-2003
TO INSTRUCTION 10-515
JULY 31, 2003

Operations and Services
Public Weather Services, NWSPD 10-5
WFO Non-Precipitation Weather Products Specification, NWSI 10-515

WESTERN REGION NON-PRECIPITATION WEATHER PRODUCTS

OPR: W/WR1x2 (C. Schmidt) **Certified by:** W/WR1 (R. Douglas)
Type of Issuance: Initial

SUMMARY OF REVISIONS: This supplement supersedes Regional Operations Manual Letter 17-01, dated November 11, 2001, filed with WSOM C-42 and C-44.

Signed 07/15/03
Vickie Nadolski Date
Director, Western Region

Table of Contents: Page

1. Description. Hazardous weather not directly involving precipitation (such as high wind or dense fog) is addressed by Western Region (WR) Weather Forecast Offices (WFOs) by issuing non-precipitation weather outlooks, watches, warnings, and advisories. They are issued when

conditions are expected to meet established criteria that pose a threat to people in the County Warning and Forecast Area (CWFA). Weather that does not meet hazardous criteria should be addressed in products such as the Short Term Forecast (AWIPS header NOW) or Special Weather Statement (AWIPS header SPS).

1.1 Forecaster Judgement: Written instructions cannot address every operational situation. All WFO personnel must exercise initiative and professional judgement to minimize risk to public safety and property in situations not explicitly covered by written instructions. Personnel must balance safety and needs of customers against frequency of warnings and possible constraint of travel and commerce. Protection of life and property shall take precedence in these decision making processes.

2. Products. Outlooks for potentially hazardous non-precipitation weather will be included in the daily Hazardous Weather Outlook (AWIPS header HWO). Outlooks can also be issued as separate Special Weather Statements (SPS) as stated in 10-515 section 3, but in order to keep duplication of effort to a minimum, separate outlooks are not mandatory in WR.

Watches, warnings, and advisories for non-precipitation weather hazards are issued under the category NPW, and are referenced in the appropriate section of the HWO. Each of these products use the modernized site ID for the appropriate WFO in the AWIPS header. See http://ww2.wrh.noaa.gov/public/WMOheaders/warningprods.htm for a full list of WMO and AWIPS Ids for WR non-precipitation weather products.

The MND header for all non-precipitation (NPW) products will not be "Non-Precipitation Watch/Warning/Advisory", but will include the specific hazard such as "Dense Fog Advisory" or "High Wind Warning".

2.1 Product Types and appropriate lead times.

a. Outlooks. Outlooks are issued in the HWO for potential hazards which may develop in the Day 3-7 period of the forecast. An SPS may be issued for these events if required by local customers under the MND header "Special Weather Statement". It is appropriate to include non-warning/advisory conditions in the HWO if those conditions could pose a significant threat to the public if they are not prepared.

b. Watches. In WR, watches for non-precipitation events are issued when the risk of a hazardous weather event is significant in the 12 to 48 hour time frame, but occurrence, location, severity, and/or timing is uncertain. Watches may be issued beyond 48 hours for large synoptic scale storms, but care must be used so that we do not reduce the effectiveness of watches by issuing too many false alarms.

c. Warnings. Warnings are issued when an event meeting established criteria is occurring, imminent, or has a significant probability of occurrence within the next 36 hours. Warnings may be issued beyond 36 hours for large synoptic scale

storms, but care must be used so that we do not reduce the effectiveness of warnings by issuing excessive false alarms.

d. Advisories. Advisories are issued for certain events that have a significant probability of occurrence in the first 36 hours. These events are defined as non life-threatening by themselves, but they could become life-threatening if caution is not exercised.

2.2 Relationship to Winter Weather Products (WSW). Winter related non-precipitation hazards (except wind), such as freeze warnings or dangerous wind chills, that are associated with a winter storm for which other watches/warnings/advisories are issued, may be included in a single **WSW** product. However, high wind watches/warnings and wind advisories will not be combined in WSWs. Issue all high wind watches/warnings/advisories as their own NPW product. Winter weather warnings/ advisories will not be combined with non-precipitation hazards in the NPW product at any time.

2.2.1 Combined wind and snow events. The following guidelines may help forecasters decide which product(s) to issue when certain combinations of wind and snow are expected:

a. If strong winds will be in the same zones as winter precipitation that meets criteria, issue Blizzard/Winter Storm Warnings or Winter Weather Advisories rather than separate WSWs and NPWs.

b. If the snow amounts or blowing snow visibility/snow drifts do not meet warning/ advisory criteria but wind does, forecasters have the option of issuing either an NPW or combining the elements for Blizzard/Winter Storm Warnings or Winter Weather Advisories in a WSW.

2.3 Relationship to Short Term Forecast (NOW). Both hazardous and non-hazardous non-precipitation weather may be addressed in the Short Term Forecast (NOW). When locally-established criteria for non-precipitation weather are met, NOWs should be issued to relay information for approximately the one to three hour time frame. When warnings or advisories are in effect, the appropriate headlines should be included in the NOW. NOWs should contain detailed information on timing and location (i.e., use “wind will be strongest near Cajon Pass until noon” rather than “gusty winds at times early today”).

2.4 Relationship to Severe Thunderstorm Warning (SVR). There will be times when high wind events are both convective and "gradient" in nature, such as convective cells embedded in strong gradient wind flows. In these instances forecaster discretion and sound judgement will determine which type of warning is the most appropriate; however, when damaging wind can be directly related to convective cells, a Severe Thunderstorm Warning is most appropriate.

2.5 Air Stagnation Advisories. WR WFOs that have an air stagnation advisory program in cooperation with state and local air quality officials will issue the products under the AWIPS header ASA. Air stagnation advisories in WR should not be issued under the NPW

category. Air stagnation advisories should address only meteorological conditions that cause air stagnation, and should not be used to relay information on pollution levels.

3. Criteria. Criteria for non-precipitation watches/warnings/advisories will consider climatology and customer needs, and reflect a balance between public safety and excessive false alarms. Customers, emergency management officials, concerned federal, state and local government agencies, the media, Western Region Headquarters (MSD), and all other appropriate groups must be made aware of WFO's criteria for non-precipitation watches, warnings, and advisories. Local customer and partner awareness will be maintained with regular outreach, and is especially important when criteria changes are being considered.

The State Liaison Office MIC (SLOMIC) will coordinate all criteria with MICs of WFOs within his/her state to ensure consistency for climatologically similar areas, keeping in mind those separated by state or county borders. To aid the coordination of warning and advisory criteria in adjacent CWFAs, WFOs will post their non-precipitation watch/warning/advisory criteria in their SDM on the MSD intranet site http://sdm.wrh.noaa.gov.

Non-precipitation watch/warning/advisory criteria will follow those listed in NWSI 10-515 with the following exceptions and regional definitions:

3.1 High Wind.

3.1.1 High Wind Warnings. The criteria for high wind warnings in the Western Region is **sustained winds of 40 mph or higher and/or gusts of 58 mph or greater**, unless otherwise defined below. Forecaster judgement is crucial in deciding whether or not to issue high wind warnings. The forecaster must take into account the affect of the expected high wind (how much damage may occur), the areal extent of the wind, and the length of time the wind will occur, when making the decision. The criteria set herein is guidance; the overriding factor in the warning decision is the affect to life and property.

If a single high wind report occurs when no warning is in effect, and it is not expected to continue, the issuance of a high wind warning is not required and a special weather statement (SPS) or short term forecast (NOW) should be issued.

Exceptions to the regional high wind warning criteria for specific areas are:

a. **Mountain Areas**. Since mountain winds frequently exceed the criteria above, especially over ridges or exposed peaks, the criteria for high wind warnings in the mountains may be increased. In most areas, mountain high wind warning criteria should be sustained winds of 50 mph or higher and/or gusts to 75 mph or greater over areas affecting the populace, e.g. ski resorts, roads through mountain passes, etc. Other criteria can be defined based on local need. The forecaster's best judgement, along with these recommended criteria, will provide the final determination of whether or not a high wind warning or watch is issued. The lower vertical limit of "mountains" will be described by local definitions

established by the SLOMIC/MIC, but should be understood by users and the media, and will be clearly documented in the SDM.

b. **Upper Yellowstone Valley, Montana**. In the vicinity of Livingston to Big Timber: High wind in this valley is defined as sustained 50 mph or higher and/or gusts to 75 mph or greater without regard to duration or areal extent.

c. **Columbia River Gorge, Washington/Oregon**. From Cascade Locks, Oregon, to Troutdale, Oregon, including the hills five (5) miles either side of the Gorge: High wind in this area is defined as sustained 50 mph or higher and/or gusts to 75 mph or greater without regard to duration or areal extent.

3.1.2 Wind Advisories. In Western Region, Wind Advisories are optional and criteria are defined locally.

3.2 Wind Chill. Dangerous wind chill is defined by NWS as the effective temperature (wind chill index, per WMO [2001]) at which the health and well being of people is put in serious jeopardy. The effective temperature is dependent on ambient air temperature, wind speed, and exposure. Wind chill warnings and advisories should include information on the time to frostbite at the predicted wind speeds and temperatures. A table of wind chill values is available in 10-515 Appendix B.

3.2.1 Wind Chill Warnings. Wind chill warnings will be issued when wind chill index temperatures are expected to drop below a locally determined effective temperature threshold (usually **-20 F to -40 F**) for more than one hour, with wind speed at least 10 mph. The exact criteria for both temperature and duration are set locally.

3.2.2 Wind Chill Advisories. Wind chill advisories are optional and criteria should be established locally. When establishing wind chill advisory criteria, consider the climatological range and frequency of combined wind and cold events that pose potential danger for unprepared citizens.

3.3 Excessive Heat. WR WFOs will issue heat products when the combination of heat and humidity (as determined by the heat index (HI)) are forecast to exceed the following criteria. Heat Index values are available in 10-515 Appendix B.

3.3.1 Excessive Heat Warnings. Basic WR excessive heat warning criteria is: **heat index (HI) at least 115 for 3 hours or more, with minimum nighttime heat index at or above 80.** In climatologically hotter areas, local offices may set different criteria and will coordinate it with their SLOMIC and post their criteria on the WR SDM intranet site. Notable exceptions to the above criteria are listed below.

a. Extreme Southern Nevada (Lake Mead/Las Vegas): >125 Day / 90 Night
b. Southern California Valleys and Deserts
   Low Deserts (Imperial Valley): >120 Day / 90 Night
   High Deserts (Mojave Desert): >115 Day / 90 Night

c. Arizona
Below 1000 Ft (Yuma Desert): >125 Day / 90 Night
1000-2500 Ft (Phoenix): >120 Day / 90 Night
2501-4000 Ft (Tucson): >115 Day / 90 Night

3.3.2 Heat Advisories. Heat Advisories are optional and are based on locally established criteria.

4. Product Format. NPWs are segmented products. Format details are well described in Instruction 10-515.

4.1 Overview. NPWs may include an optional overview section before the segments. The overview contains a general descriptive headline and synopsis of the event. It is placed before the segments, without UGC. Where prior state/local agreements require, they may be placed at the end of the NPW product.

4.2 Headlines. Each segment will contain a headline(s) for each watch/warning/advisory in effect for the applicable area. Headlines will include mention of WHAT type of event is being addressed, and WHERE and WHEN the event(s) is expected to occur or is occurring (e.g., "...HIGH WIND WARNING FOR NORTHEAST NEVADA TONIGHT..."). Each segment header will include a UGC and product issuance time.

4.3 Segment Content. Within each segment the free text description of the event will be concise and restricted to addressing the specifics of the weather that is expected. Where appropriate, include mention of specific highways or other geographic locations where the public would be especially vulnerable. A definition of watch/warning must be included as shown in 10-515 sections 4.3.4.2.b and 5.3.4.2.b if the event has not yet begun.

4.3.1 Call-to-Action Statements. Concise call-to-action statements should be included in each segment if the statements relay extremely urgent messages, such as potentially life-saving actions. Other less urgent call-to-action statements may be included in one of three ways: either separated from other content within a segment by using the **&&** separator; included as part of the overview; or grouped together after the $$ ending the final segment of the product. WFOs must remember that call-to-action statements not included in the segments will not be received by customers who program their systems to only receive their local segments.

5. Cancellations. When watch-warning-advisory products are canceled or allowed to expire, an NPW product will be issued to inform the public that the threat of significant weather has ended.

6. Verification. Verification statistics for high wind warnings will be kept by each WFO. Verification should be performed in a timely manner during/after each warning/advisory event. Maintaining a good working relationship with state and local Departments of Transportation/ Highways, Law Enforcement Officials, and other groups will help WFOs gather wind and/or damage data during and after events. WFOs are encouraged to contact these reliable sources during and shortly after events, in addition to receiving reports from trained spotters and dependable automated equipment. Subjective judgement, common sense, and honesty will be the guiding factors in determining both the occurrence of high wind events and lead times. The final determination resides with the WFO MIC as to how a storm verified or whether an event occurred.

For high wind verification, large zones should receive multiple reports of high winds to verify a warning for the entire zone. Again, this is a **local decision** that may factor in the number of potential verification points (or lack thereof) within the affected area.

When logging a high wind event in Storm Data, care must be taken to properly code the entry so that the character of the wind correctly corresponds to the type of warning issued. If a high wind event is observed when a severe thunderstorm warning has been issued, the term "thunderstorm wind" will be entered. If a high wind event is observed when a high wind warning has been issued, the term "high wind" will be entered. If these events are not entered correctly, national verification will be inaccurate.

6.1 Quarterly Reports. Each office will prepare a quarterly report on high wind warning performance measure goals, warning accuracy (POD, FAR, CSI), and lead times. Other information must be reported on high wind watches (see section 6.1.2). Each report should compare WFO statistics for the quarter with the national/regional performance goals for that year, explain variances, and indicate actions being taken to address deficiencies. The quarterly periods are October- December, January-March, April-June, July-September. Quarterly reports from each office are due to WRH MSD by the end of the third week of the month following the end of quarter.

The following statistics are required quarterly for high wind events:

a. Number of high wind warnings issued: Calculate the total number of high wind warnings issued. Since warnings are issued by zones, a high wind warning for ten zones will be considered as ten warnings. Each zone must be verified and tabulated separately. Verification for high wind events will be determined using the **local criteria** for warnings.

b. Number of high wind warnings issued which verified: This will require that each warning be verified zone by zone. Use all reported data from surface observations, including mesonet, spotters, law enforcement, etc.

   If a warning was issued for an event within two hours after criteria was met and the event was not over, count the warning as a "hit" but with zero lead time. If a warning was issued two hours or more after the event criteria was met and the event was not

over, count one missed event, and one verified warning with zero lead time. Any warning issued after an event is over counts as one missed event and one incorrect warning.

c. Number of warnings issued which did not verify.

d. Number of high wind events in which no warning was issued: Again, use local criteria and areal size of the event when determining if an event occurred for which a warning should have been issued.

e. Average event lead time: The lead time should be calculated as the time from warning issuance to the estimated time the warning criteria was met. This will require a judgement as to when an event began. Round to the nearest hour. The average lead time should be the arithmetic mean of all event lead times. Any event occurring without an issued warning is treated as a zero lead time event. Also, if a warning was issued within two hours after the event began and warning criteria met, use a lead time of zero (i.e., do not count negative lead times).

f. Number of warnings which verified and were preceded by a watch.

6.1.1 FAR, POD and CSI calculations. Each WFO should tabulate their individual year-to-date statistics for the period in question. To assist the effort, consider the following table:

OBSERVED \ FORECAST	Yes	No
Yes	a	b
No	c	d

Where:

Warnings issued: (a+c)
Correct warnings: (a)
Warnings which did not verify: (c)
Unwarned events: (b)

POD is defined as a /(a+b)
FAR is defined as c /(a+c)
CSI is defined as a /(a+b+c)

6.1.2 Watch information. High wind watches must also have some verification performed to make sure we are providing a valuable service to our customers. Not all watches must lead to warnings, and thus simple POD/FAR/CSI will not be tracked for watches. The following information will help measure the overall value of the watch program:

a. Number of watches issued. Same as 6.1.a except for watches.

b. Number of watches that lead to warnings. Same number as reported for 6.1.f.

c. Number of events not "watched". This number is calculated by determining the number of events that reached warning criteria, but were not preceded by a watch. Count all events that reached criteria, regardless of whether a warning was issued.

d. Lead time for watches. calculate average watch lead time only for those watches that preceded events reaching warning criteria (regardless of whether a warning was issued). Using only those events, calculate the time from watch issuance until the time warning criteria was met. We will not be calculating any zero or negative lead time events for watches, only considering those that met warning criteria.

6.1.3 Report format. Each WFO must report the following information. The verification report should be combined with winter storm warning verification as defined in Supplement WR-1-2003 to Instruction 10-513. The information should be submitted to WR MSD on spreadsheet templates provided by MSD.

Station _____ Period _____

```
# Warnings Issued  /a+c/ :                Winter storm __ High wind __
# Correct Warnings  /a/  :                Winter storm __ High wind __
# Warnings Incorrect/c/  :                Winter storm __ High wind __
# Events not warned /b/  :                Winter storm __ High wind __
# Warnings preceded by Watch:             Winter storm __ High wind __
Ave lead time for events (hrs):           Winter storm __ High wind __
Period POD   a /(a+b):                    Winter storm __ High wind __
Period FAR   c /(a+c) :                   Winter storm __ High wind __
Period CSI   a /(a+b+c):                  Winter storm __ High wind __
# Watches Issued /a+c/:                   Winter storm __ High wind __
# Watches that lead to warning:           Winter storm __ High wind __
# Warned events not "watched"/b/:         Winter storm __ High wind __
Ave lead-time for "watched" events (hrs): Winter storm __ High wind __
```

6.2 Annual reports. Each WFO must submit an annual report following the conclusion of each fiscal year. The report will follow the quarterly guidelines above and can contain corrections and additional information that was not known at the time of the quarterly report. It is due to WR MSD by the end of the third week in October. Submit the report using spreadsheets provided by WR MSD.

APPENDIX A

See also the examples contained in Appendix A of NWSI 10-515.

Example 1:

WWUS45 KSLC
NPWSLC

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE SALT LAKE CITY UT
1115 AM MDT WED MAY 2 2001

UTZ019-022200-
UTAH'S DIXIE AND ZION NATIONAL PARK-
1115 AM MDT WED MAY 2 2001

...WIND ADVISORY CENTRAL WASHINGTON COUNTY UNTIL 8 PM TODAY...

A WIND ADVISORY REMAINS IN EFFECT FOR CENTRAL WASHINGTON COUNTY UNTIL 8 PM TODAY. NORTHERLY WINDS OF 30-40 MPH WITH GUSTS TO 55 MPH WILL CONTINUE IN AND NEAR THE MOUTHS OF THE NORTH-SOUTH ORIENTED CANYONS. THIS INCLUDES THE I-15 CORRIDOR BETWEEN QUAIL CREEK STATE PARK AND PINTURA AS WELL AS THE TOWNS OF LA VERKIN... TOCQUERVILLE...AND HURRICANE. WINDS WILL BEGIN TO DECREASE LATE THIS EVENING.

$$

UTZ002>004-007>010-012-013-022200-
CASTLE COUNTRY-NORTHERN WASATCH FRONT-SALT LAKE AND TOOELE VALLEYS-SAN RAFAEL SWELL-SOUTHERN WASATCH FRONT-WASATCH MOUNTAINS I-80 NORTH-WASATCH MOUNTAINS SOUTH OF I-80-WASATCH PLATEAU/BOOK CLIFFS-WESTERN UINTA MOUNTAINS-
1115 AM MDT WED MAY 2 2001

...HIGH WIND WARNING MOUNTAINS AND VALLEYS OF NORTH AND CENTRAL UTAH TONIGHT THROUGH THURSDAY...

A HIGH WIND WARNING HAS BEEN ISSUED FOR THE WASATCH FRONT... NORTHERN UTAH MOUNTAINS...CASTLE COUNTRY...AND THE SAN RAFAEL SWELL FOR TONIGHT THROUGH THURSDAY. EASTERLY WINDS ALOFT AND A STRONG SURFACE GRADIENT ARE LIKELY TO COMBINE TO CREATE GUSTS IN EXCESS OF 75 MPH. THESE WINDS WILL IMPACT TRAVEL ON I-15 AND HIGHWAY 89 IN NORTHERN UTAH AND ON HIGHWAY 6 BETWEEN PRICE AND GREEN RIVER IN CENTRAL UTAH.

A SIMILAR WEATHER PATTERN OCCURRED IN MARCH 2000 PRODUCING LOCAL WIND GUSTS UP TO 85 MPH WITH FAIRLY WIDESPREAD DAMAGE. PEOPLE IN THE WARNED AREA SHOULD PREPARE FOR DAMAGING WINDS TONIGHT AND THURSDAY...AND DRIVERS SHOULD EXERCISE CAUTION AND BE READY FOR SUDDEN CROSS WINDS.

$$

Example 2:

WWUS45 KLOX
NPWLAX

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
530 PM PST THU MAR 29 2001

...SUNDOWNER WINDS EXPECTED THIS EVENING ACROSS SOUTHERN SANTA BARBARA COUNTY...

.STRONG SUNDOWNER WINDS ARE EXPECTED THROUGH MIDNIGHT ACROSS PORTIONS OF THE SANTA BARBARA COUNTY MOUNTAINS AND SOUTH COAST. AREAS IN AND BELOW NORTH TO SOUTH ORIENTED CANYONS...SUCH AS MONTECITO HILLS...WILL BE MOST AFFECTED BY THE STRONG WINDS. THE STRONG WINDS WILL DIMINISH AFTER MIDNIGHT.

CAZ052-300430-
SANTA BARBARA COUNTY MOUNTAINS-
530 PM PST THU MAR 29 2001

...WIND ADVISORY UNTIL 12 MIDNIGHT...

THE NATIONAL WEATHER SERVICE HAS ISSUED A WIND ADVISORY FOR AREAS OF NORTH TO NORTHEAST WINDS 30 TO 40 MPH WITH LOCALLY HIGHER GUSTS THROUGH PASSES AND CANYONS. GAVIOTA AND SAN MARCOS PASSES WILL BE ESPECIALLY AFFECTED BY THE STRONG WINDS.

ALL MOTORISTS SHOULD USE CAUTION WHILE TRAVELING IN THE ADVISORY AREA...ESPECIALLY THOSE WITH HIGH PROFILE VEHICLES AND VEHICLES TOWING TRAILERS. BE PREPARED FOR SUDDEN STRONG CROSS WINDS

$$

CAZ039-300430-
SANTA BARBARA COUNTY SOUTH COAST-
530 PM PST THU MAR 29 2001

...WIND ADVISORY UNTIL 12 MIDNIGHT...

FOR AREAS OF NORTH TO NORTHEAST WINDS 25 TO 35 MPH WITH LOCALLY HIGHER GUSTS BELOW PASSES AND CANYONS. MAJOR ROADS THAT WILL BE SUSCEPTIBLE TO THE STRONG WINDS INCLUDE HIGHWAYS 1 AND 101 ALONG THE SOUTH COAST.

ALL MOTORISTS SHOULD USE CAUTION WHILE TRAVELING IN THE ADVISORY AREA...ESPECIALLY THOSE WITH HIGH PROFILE VEHICLES AND VEHICLES TOWING TRAILERS. BE PREPARED FOR SUDDEN STRONG CROSS WINDS

$$

Example 3:

WWUS76 KMTR 221308
NPWMTR

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE SAN FRANCISCO CA
506 AM PST SAT FEB 22 2003

CAZ007-008-075-221900-
SAN MATEO COUNTY-SANTA CLARA COUNTY-
ALAMEDA AND CONTRA COSTA COUNTIES-
506 AM PST SAT FEB 22 2003

...DENSE FOG ADVISORY IN THE SANTA CLARA VALLEY AND SOUTH BAY UNTIL 11 AM...

AREAS OF DENSE FOG HAVE BEEN REPORTED IN THE SOUTH BAY AND IN THE SANTA CLARA VALLEY WITH VISIBILITIES AS LOW AS 1/8 MILE AT REID HILLVIEW AIRPORT IN SAN JOSE. THE FOG IS LIKELY AFFECTING VISIBILITIES ON ROADWAYS SUCH AS I-880...I-680...US-101...AND I-280 AS WELL AS SAN JOSE STREETS. THESE CONDITIONS SHOULD BE IMPROVING BY 11 AM.

DRIVERS SHOULD SLOW DOWN AND INCREASE FOLLOWING DISTANCES. USE LOW BEAMS IF LIGHTS ARE REQUIRED. ROADWAYS MAY ALSO BE SLIPPERY DUE TO MOISTURE ACCUMULATING ON THE ROADS.

$$

Example 4:

WWUS75 KPIH 232242
NPWPIH

URGENT - WEATHER MESSAGE
NATIONAL WEATHER SERVICE POCATELLO/IDAHO FALLS ID
340 PM MST SUN FEB 23 2003

...ARCTIC AIR HAS MOVED INTO SOUTHEAST IDAHO FROM CENTRAL CANADA AND WILL BRING IN SOME OF THE COLDEST TEMPERATURES SO FAR THIS WINTER. NORTH WIND OF 10 TO 20 MPH WILL COMBINE WITH THE ARCTIC AIR TO PRODUCE WIND CHILLS OF COLDER THAN 20 DEGREES BELOW ZERO TONIGHT AND MONDAY MORNING.

WIND CHILLS THIS COLD CAN CAUSE FROSTBITE ON ANY EXPOSED FLESH IN 15 MINUTES. ANYONE VENTURING OUTSIDE MUST MAKE SURE ALL SKIN IS COVERED. PETS AND LIVESTOCK CAN ALSO SUFFER UNDER SUCH CONDITIONS AND MEASURES SHOULD BE TAKEN TO PROTECT ANIMALS THAT ARE NORMALLY KEPT OUTSIDE.

IDZ019-241230-
UPPER SNAKE HIGHLANDS-
INCLUDING THE CITIES OF...ST. ANTHONY...SQUIRREL...MARYSVILLE...
JUDKINS...ISLAND PARK...IDMON...FELT...DUBOIS...DRIGGS AND ASHTON
340 PM MST SUN FEB 23 2003

...WIND CHILL WARNING TONIGHT THROUGH 10 AM MONDAY...

EXPECT WIND CHILL TEMPERATURES OF 20 TO 30 DEGREES BELOW ZERO TONIGHT AND MONDAY MORNING IN BREEZY AREAS OF THE UPPER SNAKE HIGHLANDS...ESPECIALLY THE DUBOIS AND SPENCER AREAS.

$$

IDZ020-241230-
UPPER SNAKE RIVER PLAIN-
INCLUDING THE CITIES OF...TERRETON...RIGBY...REXBURG...MOODY...
LORENZO...IDAHO FALLS AND GOSHEN
340 PM MST SUN FEB 23 2003

...WIND CHILL WARNING LATE TONIGHT THROUGH 10 AM MONDAY...

EXPECT WIND CHILL TEMPERATURES NEAR 20 DEGREES BELOW ZERO TONIGHT AND MONDAY MORNING IN THE UPPER SNAKE RIVER PLAIN.

$$

APPENDIX B

Example of Air Stagnation Advisory:

AEUS45 KPSR 141558
ASAPSR
AZZ020>028-151600-

AIR STAGNATION ADVISORY
NATIONAL WEATHER SERVICE PHOENIX AZ
1000 AM MST TUE JAN 14 2003

...AIR STAGNATION ADVISORY IN EFFECT FOR THE VALLEYS OF SOUTH-CENTRAL AND SOUTHWEST ARIZONA TODAY THROUGH 9 AM WEDNESDAY...

HIGH PRESSURE ALOFT OVER THE SOUTHWEST STATES WILL MAINTAIN A VERY STABLE AIRMASS THROUGH EARLY WEDNESDAY. IN ADDITION... WINDS WILL GENERALLY BE LIGHT. THE COMBINATION OF THE LIGHT WINDS AND STABLE CONDITIONS WILL PROMOTE STAGNANT AIR IN VALLEY LOCATIONS WHERE INVERSIONS ARE MOST LIKELY TO PREVAIL. A WEATHER DISTURBANCE PASSING THROUGH UTAH AND NORTHERN ARIZONA WEDNESDAY WILL LEAD TO INCREASING WINDS AND IMPROVED VENTILATION BY EARLY AFTERNOON.

PLEASE NOTE THAT AN AIR STAGNATION ADVISORY IS BASED ON METEOROLOGICAL CONDITIONS AND IS NOT AN AIR POLLUTION ADVISORY OR FORECAST. AIR POLLUTION ADVISORIES AND FORECASTS ARE ISSUED BY COUNTY AND STATE AIR QUALITY DEPARTMENTS.

$$